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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/992,416	11/16/2001	Ta-Lee Yu	B-4392 619330-6	5531

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EXAMINER

VU, QUANG D

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 02/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/992,416

Applicant(s)

YU ET AL.

Examiner

Quang D Vu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3, 7-12 and 14-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7-12 and 14-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 7-12 and 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of US Patent No. 5,623,387 to Li et al.

AAPA (figure 1) teaches a low voltage triggered electrostatic discharge (LVTESD) protection circuit, coupled to a pad of an integrated circuit to protect core circuits of the IC from ESD event, the ESD protection circuit comprising:

- a semiconductor substrate (16) having the first conductivity type (p-type);
- an well region (18) having the second conductivity type (n-type), formed in the semiconductor substrate (16);
- an anode doped region (20) having the first conductivity type (p-type), formed in the well region (18);
- a gate structure (26), formed in the semiconductor substrate (16) and outside the well region (18), the gate structure (26) having a first side and a second side;
- a first doped region (28) having the second conductivity type (n-type), formed between the well region (18) and the gate structure (26), immediately adjacent to the first side of the gate structure (26) in the semiconductor substrate (16);

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a second doped region (30) having the second conductivity type (n-type), formed next to the second side of the gate structure (26) in the semiconductor substrate (16); and

AAPA differs from the claimed invention by not showing a plurality of isolated islands distributed in the first doped region so that the resistance of the first doped region is increased, wherein at least one of the isolated islands is completely surrounded by the first doped region. However, Li et al (figures 10C-E) teach a plurality of isolated islands (1011) distributed in the doped region having the second conductivity type (n-type) (305), wherein at least one of the isolated islands is completely surrounded by the first doped region (column 17, lines 6-12). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Li et al. into the device taught by AAPA because it prevents the current hogging and results the device in high ESD voltage tolerance. The combined device shows a plurality of isolated islands distributed in the first doped region so that the resistance of the first doped region is increased, wherein at least one of the isolated islands is completely surrounded by the first doped region.

Regarding claim 2, AAPA teaches a first contact region (34) having the first conductivity type (p-type), formed in the semiconductor substrate (16); and

a second contact region (36) having the second conductivity type (n-type), formed in the well region (18);

wherein the first contact region (34) is coupled to the second doped region (30) and a power pad of the integrated circuit, and the anode doped region (20) is coupled to the pad (12).

Regarding claim 3, AAPA teaches the second contact region (36) is coupled to the anode doped region (20).

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Regarding claim 7, the combined device shows the isolated islands are field oxide.

Regarding claim 8, the combined device shows each of the isolated islands (1011) has approximately the same width.

Regarding claim 9, the combined device shows each of the isolated islands (1011) is elongated and approximately parallel to the first side of the gate structure (26).

Regarding claim 10, the combined device shows each of the isolated islands is elongated and approximately perpendicular to the first side of the gate structure (26).

Regarding claim 11, AAPA teaches the first conductivity type is a p-type, and the second conductivity type is an n-type.

Regarding claim 12, the disclosures of AAPA and Li et al. are discussed as applied to claim 1.

Regarding claim 14, the combined device shows a plurality of oxide layers, and each of the isolated islands (1011) is formed by one of the oxide layers.

Regarding claim 15, the combined device shows each of the isolated islands has approximately the same length.

Regarding claim 16, the combined device shows each of the isolated islands (1011) has an elongated profile and is approximately parallel to the first side of the gate structure (26).

Regarding claim 17, the combined device shows each of the isolated islands has an elongated profile and is approximately perpendicular to the first side of the gate structure.

Regarding claim 18, AAPA teaches the first conductivity type is a p-type, and the second conductivity type is an n-type.

Regarding claims 19 and 20, the combined device shows the first doped region and the second doped region (AAPA; figure 1) are heavily doped regions.

### ***Response to Arguments***

Applicant's arguments filed 11/20/03 have been fully considered but they are not persuasive.

It is argued, in page 9 of the remarks, that AAPA and Li et al. do not teach or suggest a plurality of isolated islands distributed in the first doped region. This argument is not convincing because AAPA and Li et al. teach a plurality of isolated islands (1011) distributed in the doped region having the second conductivity type (n-type) (figures 10 C-E). Therefore, the doped region now reads on the second conductivity type, which is the first doped region.

It is argued, in page 9 of the remarks, that AAPA and Li et al. do not teach or suggest at least one of the isolated islands is completely surrounded by the first doped region. This argument is not persuasive because Li et al. (figures 10 C-E) teach at least one of the isolated islands (1011) is completely surrounded by the first doped region (305, 1012a, 1013a).

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang D Vu whose telephone number is 703-305-3826. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on 703-308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

qv  
January 26, 2004



EDDIE LEE  
SUPERVISORY PATENT EXAMINER  
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